



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,749	09/06/2006	Masafumi Hashimoto	SPL-06-1222	3421

35811 7590 08/24/2009
IP GROUP OF DLA PIPER LLP (US)
ONE LIBERTY PLACE
1650 MARKET ST, SUITE 4900
PHILADELPHIA, PA 19103

EXAMINER

JACKSON, MONIQUE R

ART UNIT	PAPER NUMBER
----------	--------------

1794

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

08/24/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

DETAILED ACTION

1. Upon reconsideration, the finality of prior office action dated 5/8/09 has been withdrawn and the below final rejection is presented in response to the claim amendments. Any inconvenience to the Applicant is regretted.

2. The amendment filed 8/7/09 has been entered. Claims 1-22 have been cancelled. New claims 23-33 have been added. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 23-25, 27-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (USPN 6,117,510.) Ishikawa et al teach a polyimide adhesive film/tape comprising an aromatic polyimide support film (*reads upon core layer having high rigidity and low linear expansion coefficient*), with a thickness of 5-150 microns, at least one side of which has a thinner tack-free adhesive layer formed thereon by heating a coating layer comprising an epoxy resin (*reads upon broadly claimed "heat-resistant surface treatment agent"*) and a polyimide precursor which yields a heat resistant amorphous polyimide or polyimidosiloxane obtained from preferably 2,3,3',4'-biphenyltetracarboxylic acid and aromatic diamines, wherein the aromatic diamines include 1-40 mol%, particularly 2-40 mol% of diamines having an OH or COOH functional group, 10-95mol%, particularly 40-85mol% of diaminosiloxane, and 0-60mol%, particularly 5-50mol% of aromatic diamine having no additional functional groups, such as 1,4-diaminobenzene (*aka p-phenylenediamine*) or bis(4-aminophenyl)ether (*aka 4,4-diaminodiphenyl ether*) (Abstract; Col. 2, lines 36-50; Col. 3-Col. 5, line 10; Examples.) Ishikawa et al teach that the polyimide core has a linear thermal expansion coefficient at 50-

Art Unit: 1794

200°C of 4×10^{-6} - 25×10^{-6} cm/cm/°C and is preferably produced by heat drying 3,3',4,4'-biphenyltetracarboxylic dianhydride (in combination with pyromellitic dianhydride as necessary) and paraphenylenediamine (in combination with paradiaminodiphenyl ether as necessary) at any desired maximum heating temperature selected within the range of 350-500°C (Col. 2, lines 45-57.) Ishikawa et al also teach that the polyimide support film may be subjected to surface-active treatment with a silane coupling agent or organic metal (Col. 2, lines 41-44.) Ishikawa et al teach that the adhesive layer preferably has a tensile modulus (25°C) of 10-150 kgf/mm² and is coated from the adhesive solution to preferably give a thickness of 2-50microns on one or both sides of the support film (*which based upon the support film properties and same composition of the coating layer, would result in the claimed over film tensile modulus and linear expansion properties*; Col. 7, line 57-Col. 8, line 10.) Ishikawa et al also teach laminates formed from the above adhesive coated polyimide film or tape adhered to a copper foil and further teach that the films can be utilized in the production of flexible printed circuit boards (Examples; Col. 1-2; Col. 12.) Hence, Ishikawa et al clearly teach all of the limitations of the instant claim 1 with the exception of the slight difference in thickness of the coating layer. The instant claims recite 0.5-1 micron while Ishikawa et al recite a preferred range having an endpoint of 2 microns, just slightly thicker than the claimed values. However, it would have been obvious to one having ordinary skill in the art to conserve materials by utilizing a coating thickness slightly lower than the preferred range taught by Ishikawa et al while utilizing routine experimentation to determine the optimum thickness to provide the desired adhesive properties as well as mechanical properties of the final composite film, given the reasonable expectation of success and the close proximity of the claimed range to the preferred range taught by Ishikawa et al.

Art Unit: 1794

4. Claims 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al in view of EP 0 538 075. The teachings of Ishikawa et al are discussed above. Though Ishikawa et al teach that the polyimide support can be treated with a silane coupling, Ishikawa et al do not teach that the silane coupling agent, particularly an epoxysilane or aminosilane, is provided in the adhesive coating composition as instantly claimed. However, EP'075 teaches a similar silicon-polyimide adhesive film wherein the adhesive polyimide film is formed from similar materials but also further incorporates aminosilanes into the coating to improve the strength of the resulting film and the adhesion strength (Abstract; Page 11, lines 29-31.) Hence, one having ordinary skill in the art at the time of the invention would have been motivated to incorporate silane coupling agents such as known epoxysilanes or aminosilanes, particularly the aminosilanes as taught by EP'075, into the adhesive coating in the invention taught by Ishikawa et al to provide improved adhesion strength and overall film strength as taught by EP'075.

Response to Arguments

5. Applicant's arguments with respect to claims 23-33 have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1794

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 10:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monique R Jackson/
Primary Examiner, Art Unit 1794
August 19, 2009